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fronds covered with soft brown hairs, which fall away with age except at very base, reddish brown, $2\frac{1}{2}$ –5 in. long; mature frond 7–11 in. long, 2–3 in. wide, pinnate, tapering abruptly at base to auricles, but gradually to tip of frond, sometimes 5 in. of upper end of frond being about $\frac{5}{8}$ in. wide throughout, while sometimes the shape is very regular, tapering to a blunt point and almost pinnate to the end; pinnae opposite or alternate, nearly linear, blunt, notched on lower side at base, slightly auricled on upper side, irregular in length but presenting a generally uniform character; surfaces naked, rachis only pubescent; costae and veins very distinct beneath, blackish purple; veins all simple, terminating short of the edge, each bearing at the end a round sorus with edge of frond showing beyond it; edges and ends of pinnae ciliate with scattered hairs of the same color as veins, which fall away with age; receptacles punctured through to upper side of pinnae, each one bearing a white button, after the fern reaches a certain age; texture coriaceous, veins not showing on upper side.

Nearest to *P. Plumula* but differs in texture, in larger size, in broader pinnae, in more distinct venation and in the white buttons on upper side of frond.

Blue Mountains, Jamaica, collected by Alexander Moore.

Botanical Notes.

The Vermont Botanical Club held an extremely interesting session at its second annual meeting on February 5th and 6th 1897.

The meetings were held in one of the lecture rooms in the new Williams Science Hall. Papers were read in person by President Ezra Brainerd and Profs. E. A. Burt and H. M. Seeley, of Middlebury College; Profs. L. P. Jones, G. H. Perkins and F. A. Waugh, of the University of Vermont; Mr. C. G. Pringle, of Charlotte, Vermont, and several others.

Mr. Pringle's paper, which will be printed in full in another issue of the BULLETIN, was probably the most highly appreciated of all. We have all known of Mr. Pringle's great achievements as a collector and explorer, but I think very few realize what a delightful speaker and writer he is when induced to lay aside his habitual timidity and reserve.

The importance of a botanical survey of the State was

urged upon all interested in Vermont botany by Prof. Jones, Prof. Burt and others, and it was decided to publish in '98 or '99 a new State Flora which shall embody the large amount of information collected by members of the club and others since the publication of Prof. Perkins' Flora in 1888. It is intended that the list shall contain not only a list of Phanerogams and Pteridophytes, but also of the Musci and possibly of the Hepaticae and Fungi.

The meetings of the club were attended not only by members but by many others, the attendance varying from fifty to one hundred. The air was fairly electric with botanical enthusiasm, affecting even the reporters present.

It has been the aim of the club to arouse a general interest in botany and foster enthusiasm by bringing together all persons in the State who are at all interested in the study of plants. Its marked success in this direction is due very largely to the efforts of President Brainerd and Prof. Jones, both of whom have been indefatigable in the work of interesting others in our varied and interesting flora.

The success of this club ought to encourage the organization of similar associations elsewhere. The first meeting was held on July 4, 1895, in the heart of the Green Mountains in Stratton, where half a dozen enthusiasts had gathered to celebrate by collecting rare carices. A temporary organization was formed with President Brainerd as president and Prof. Jones as secretary, and a committee was appointed to arrange for the first in-door meeting in February, '96. That meeting was successful beyond all anticipations, as was the field meeting and excursion to Mt. Mansfield in July, '96.

An excursion to Mt. Willoughby or some other point of botanical interest is planned for the summer.

A. J. GROUT.

Note on Dicksonia dissecta Sw. Considerable discrepancy exists among authors concerning the synonymy of species in the genus *Dicksonia*. Swartz, who was the original author of *D. dissecta*, as well as of its congeners *D. cicutaria* and *D. apiifolia*, describes it as "very decompose, pinnules oblong, obtuse, sinuato-pinnatifid, laciniae obtuse *gibbous* subcrenulate." Hooker, in the "Species Filicum," described *D. dissecta* Sw. as a fern "which might with-

out violence to nature be considered a variety of *D. cicutaria*." Judging from his description this is true, for it reads as if it might have been drawn from a frond of that species. Grisebach, however, while still retaining Swartz as the author of the species, gave it as "non Hook," thus showing that he did not agree with Hooker's description. Then came the "Synopsis Filicum," which gave *D. dissecta* as a synonym of *D. adiantoides* H.B.K., a bipinnate fern, and also gave it as "Grisebach, non Hooker," thus agreeing with Grisebach who gave "*D. adiantoides* W. non Hook," as a synonym for *D. dissecta*. This still further complicated the matter. The latest author to treat of the subject is Mr. G. S. Jenman in his "Ferns of Jamaica," 1891. He makes *D. adiantoides* H.B.K. the same as *D. Pavoni* in Hooker's "Species," and places it next to *D. Plumieri* HK. which has sori extending all around the edge of frond. His *D. dissecta* is placed next after *D. cicutaria* and *D. apiifolia*, thus making it accord with them in a general way, as it undoubtedly does.

The synonymy of *D. dissecta* is therefore decidedly mixed; but I accept Mr. Jenman as my guide, not only because he has been the latest to investigate the subject, and has enjoyed the privileges of the Kew herbarium and library, but also because he was for years an active collector in the field, an extremely careful observer, and had unrivalled opportunities for the comparison of living plants in their native habitats. Besides, his descriptions are taken from Jamaica specimens, and it was from this island that Swartz obtained his specimens from which the species was originally described. The only important point which Jenman's description omits is the fact that the sori of *D. dissecta* are not "in a crenature near the base," but on the summit of a tooth near the base, the whole width of which they cover, being about twice as broad as they are deep. Perhaps the "gibbous" feature of Swartz's description may refer to this hump near the base of the crenature.

The fact is that while the cutting of the frond quite closely resembles that of *D. cicutaria*, the situation of the sorus and the character of the sorus itself are distinctly different from that species. The sorus is twice as broad as long, the involucre proper is scariose, and the edge of frond is not changed in texture and hardly ever

reflexed. As the sporangia mature they simply push down the involucre, and almost, if not quite, cover and conceal it, but the edge of frond remains unchanged. In other words the involucre is distinctly two-valved, instead of being united with the edge of frond and therefore cup-shaped or campanulate; and I should be inclined to place it in the broad, two-lipped *Balantium* group, instead of the cup-shaped *Patania* group where *D. cicutaria* belongs.

Fertilization of Alnus incana and Salix discolor.—(1) *Alnus incana* (L.) Willd. Anemophilous; self-fertilization is prevented by the amentiferous branches curving downward at the end, bringing the pistillate aments above the pendulous staminate. Usually monoecious, but the number and condition of the two kinds of aments varies greatly upon different plants. Many of the bushes have the staminate aments large and fully developed, a part of the branches bearing no other kind, the number of staminate ones to a branch then increases from 3 or 4 to 6, 8 or 9. On the other hand, a part of the bushes have the staminate aments small and poorly developed, many branches bearing only the pistillate kind, which are then more numerous than when the branch is monoecious. It is not rare for a large bush to produce only pistillate aments, which are then larger in size (about 1" longer) and a deeper brownish red. Young plants generally produce only staminate aments (from 4 to 7 branches are amentiferous) but this is never true of medium or large-sized bushes. The staminate aments are frequently injured by insect larvae. A branch two feet in length bore 297 aments of both kinds. The pistillate are much more numerous than the staminate; of 663 aments examined on several branches of a single plant 471 were pistillate, 192 staminate. A staminate ament $2\frac{1}{2}$ ' long was composed of 31 scales, 77 flowers and 310 stamens. The parts of the flower are usually in fours, petals none, but occasionally a flower is five-parted, when five petal-like scales alternating with the sepals may be present. The pollen is abundant and easily set free by the wind.

Visitor: During eight years I have never, except in one instance, seen this species of *Alnus* visited by insects. On April 6, 1892, on a sunny hillside I observed a score or more of the honey-bee, *Apis mellifica* ♂, collecting pollen. Examination showed that the "pollen-baskets" were loaded with pollen.

(2) *Salix discolor* Muhl. Entomophilous, but probably descended from anemophilous ancestors. Dioecious, blooming in early spring before the appearance of the leaves, when the bright yellow anthers render the staminate plants very conspicuous, odor marked and agreeable, honey and pollen abundant. A staminate ament about 1' long contained 270 flowers. The pollen is not easily dislodged when a branch is shaken, and it is often retained by the silky hairs with which the ament is clothed after it has fallen from the anthers.

In a pistillate ament 1' 1'' long there were 142 pistils, stigmas two, bilobed, nearly sessile, honey-yellow, papillose; the honey is secreted on the tip of a small flat gland at the base of the ovary on the inner side.

Owing to the pollen, of which there is a large store, the staminate aments attract a more numerous company of insects than the pistillate. Both bees and diptera are very common. Numerous black ants climb the stems and steal the honey, I have also seen them struggling over and carrying off living *Rhamphomyia*.

According to H. Muller (Fertilization, p. 524) many species of *Andrena* visit the willows almost exclusively in search of food for their young.

Visitors: A. Hymenoptera—(1) *Apis mellifica* ♀, (2) *Andrena* sp. (3) *Halictus parallelus* ♀, (4) *Nomada bisignata*; B. Diptera—(5) *Myops vicaria*, (6) *Pristiphora idiota*, (7) *Borlorus* sp. (8) *Gonia frontosa*, (9) *Lucillia cornicina*, (10) *Homalomyia scalaris*, (11), (12), (13) *Rhamphomyia* three species; C. Coleoptera—(14) *Cyphon obscurus*, (15) *Dorytomus* sp. D. Hemiptera, one species. (Taken on aments of both kinds, April 20–24, Waldoboro, Me.)

NOTE.—In the identification of insects I am indebted to Dr. Henry Skinner, of Philadelphia.

JOHN H. LOVELL.

WALDOBORO, MAINE.